# An Introduction to Entomology: Vol. 3: or Elements of the Natural History of the Insects

William Kirby; William Spence

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AN

INTRODUCTION

TO

ENTOMOLOGY:

OR

ELEMENTS

OF THE

_NATURAL HISTORY OF INSECTS:_

**WITH PLATES.**

**BY WILLIAM KIRBY, M.A. F.R. AND L.S. RECTOR OF BARHAM,**

AND

**WILLIAM SPENCE, ESQ. F.L.S.**

**VOL. III.**

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## ADVERTISEMENT.

The publication of the concluding volumes of the "Introduction to Entomology" has been unavoidably delayed by the continued ill health of one of the Authors, which has devolved upon the other a considerable increase of labour, and demanded a greater expenditure of time than would otherwise have been required: for though Mr. SPENCE put every facility in Mr. KIRBY'S power, and had drawn up a rough copy of every Letter belonging to his department; yet, as most of them had been written several years ago, many curious facts, and a great variety of interesting information subsequently derived from various sources, were necessarily to be inserted, and the whole to be prepared for the press.

When the thousands of objects that were to be examined, and many of them repeatedly, in composing the Letters on the External Anatomy of Insects, are considered, it will not appear surprising if some errors should have crept in; especially as Mr. KIRBY was deprived of the effectual help formerly derived from the acumen, learning, and judgement of his esteemed coadjutor, by his lamented and protracted indisposition: but it is hoped that these errors will be found of minor

importance, and not to affect any general principles advanced. The same remarks are also in part applicable to the Anatomical and Orismological Tables (VOL. III. p. 354-393, and VOL. IV. p. 257-354), which were drawn up by the Authors jointly many years ago, before any other portion of the work was composed, but which have, especially the former, required considerable alterations and additions in consequence of subsequent observations and information.

It will not be amiss here to state, in order to obviate any charge of inconsistency in the possible event of Mr. KIRBY'S adverting in any other work to this subject, that though on every material point the authors have agreed in opinion, their views of the _theory of instinct_ do not precisely accord. That given in the second and fourth volumes is from the pen of Mr. SPENCE.

It was originally intended, as mentioned in the Preface, to have given a complete list of Entomological works, of which a large portion was drawn up; but the great length to which more important matters have extended, has rendered necessary the intire omission of this list,--an omission in some degree compensated by the catalogue of _Authors quoted_, which comprises most of the standard Entomological works.

## ERRATA.

Page. Line.

29 27, _for_ Pseudo-c_o_rdia _read_ Pseudo-c_a_rdia.

33 7, _for_ 1/12 _read_ 1-1/2.

35 7 and elsewhere, _for_ Gigas _read_ grandis.

46 16, _for_ number and situation _read_ in some respects.

98 6, _for_ Furtina _read_ Jurtina.

121 note^d, _for c read c´._

135 note^b, _for_ XXIV. _read_ XXIII.

137 note^a, _for_ 17 _read_ 18.

251 4, _for_ ten _read_ nine.

378 10, } _for_ frœnum _read_ frænum. 359 21, }

422 note^b, _for_ a´ _read_ a´´.

425 note^b, _for_ b´´ _read_ b´.

471 1, _dele_ Pelecotoma.

10, _for_ orbicular _read_ subtriangular.

512 antepenult. _After_ genera _insert_ except in some _Acridæ_, as _A. viridissima_.

562 note^c, _for_ πνεω _read_ πνυμι.

606 5, _for_ Heteropterous _read_ Homopterous.

## DIRECTIONS TO THE BINDER.

The Synoptical Table of the Nomenclature of the Parts of the External Crust of Insects should be placed opposite to page 354.

Plates VI-XX. should be placed in this Volume, and the remainder in the Fourth.

It is however suggested to Purchasers, that in binding complete Sets

of the Work, a separate Volume may be formed of the Synoptical Table, the Plates and their Explanations, and the Indexes.

## CONTENTS OF VOL. III.

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## NOTICE RESPECTING VOL. I. AND II.

It being judged expedient, since the publication of the last Edition of the first and second Volumes of this Work, to adopt a new plan with respect to the reference letters of the Plates, the Reader is requested to make the following corrections in those Volumes.

## VOL. I.

Page. Note.

125 ^e, _for_ f, d _read_ a´´.

273 ^a, _for_ a _read_ _a_.

395 ^a, _for_ 29, 30 _read_ 13.

## VOL. II.

244 ^c, _for_ a _read_ _a_.

319 ^b, _for_ 10 _read_ 14.

348 ^a, _for a read e´´´._

353 ^a, _for_ 7--. _read_ 16--.

366 ^b, _for a read s´´, v´´´._

^c, _for b read t´´._

405 ^a, _for_ 1.8. aa _read_ 18. _c_†.

^b, _for_ bb _read_ _q´´´_.

406 ^e, _for_ bb _read_ _C´´_.

407 ^e, _for_ cc _read_ _C´´ C´´_, which represent the bundles of muscles in connexion with the drums. In the above figure the mirror is the part directly under those bundles.

AN

# INTRODUCTION

TO

# ENTOMOLOGY.

## LETTER XXVIII.

## _DEFINITION OF THE TERM_ INSECT.

What is an insect? This may seem a strange question after such copious details as have been given in my former Letters of their history and economy, in which it appears to have been taken for granted that you can _answer_ this question. Yet in the scientific road which you are now about to enter, to be able to define these creatures technically is an important first step which calls for attention. You know already that a butterfly is an insect--that a fly, a beetle, a grasshopper, a bug, a bee, a louse, and flea, are insects--that a spider also and centipede go under that name; and this knowledge, which every child likewise possesses, was sufficient for comprehending the subjects upon which I have hitherto written. But now that we are about to take a nearer view of them--to investigate their anatomical

and physiological characters more closely--these vague and popular ideas are insufficient. In common language, not only the tribes above mentioned, but most _small_ animals--as worms, slugs, leeches, and many similar creatures, are known by the name of _insects_. Such latitude, however, cannot be admitted in a scientific view of the subject, in which the class of insects is distinguished from these animals just as strictly as beasts from birds, and birds from reptiles and amphibia, and these again from fishes. Not, indeed, that the just limits of the class have always been clearly understood and marked out. Even when our correspondence first commenced, animals were regarded as belonging to it, which since their internal organization has been more fully explained, are properly separated from it. But it is now agreed on all hands, that an earthworm, a leech, or a slug, is not an insect; and a Naturalist seems almost as much inclined to smile at those who confound them, as Captain Cook at the islanders who confessed their entire ignorance of the nature of cows and horses, but gave him to understand that they knew his sheep and goats to be birds.

You will better comprehend the subsequent definition of the term _Insect_, after attending to a slight sketch of the chief classifications of the animal kingdom, more especially of the creatures in question, that have been proposed. That of Aristotle stands first. He divides animals into two grand sections, corresponding with the _Vertebrata_ and _Invertebrata_ of modern Zoologists: those, namely, that have blood, and those that have it not[1]:--by this it appears that he only regarded _red_ blood as real blood; and probably did not suspect that there was a true circulation in his _Mollusca_ and other white-blooded animals. His _Enaima_, or animals that have blood, he

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